**Career Academy Integrated Unit Plan**

**Academy Name: 9th Grade STEM** **School: University High School Created: 6/12 - 6/16 Created by: W. Lastowski, J. Blinn, and K. Lenhart**

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| Integrated Unit Plan Title: Genetics Counseling |
| Courses to integrate: Biology, Tech Issues, Geometry |
| Grade Level: 9th |
| Timeline & Duration: 25 days (starting at the beginning of each quarter) |

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| Unit Summary: Students will learn aspects of genetics and then develop a genetic counseling report in a simulated counseling session with a pregnant couple. |

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| **Overview of Activities/Lessons per Course** | | | | |
| Course | Tech Issues | Biology | Geometry |  |
| Activity/Lesson | Knowledge acquisition of genetics concepts and processes | Punnett Square practice  Construct pedigrees | Ratios |  |
| Activity/Lesson | Culminating project “Genetic Counseling Simulation” | Analyze Karyotypes  Compare and contrast Mitosis and Meiosis |  |  |

**Lesson Instructions for \_\_\_\_\_\_\_Tech Issues\_\_\_\_\_\_ (course):**

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| **Standards (Performance Tasks or Course Frameworks or Sunshine State Standards ):**  **Rigor & Relevance (quadrant): D** |
| **Instructions to Teacher:** Prepare **Reproduction Harbor** for knowledge acquisition – materials, artifacts, and worksheets |
| **Instructions to Students:** 1) Complete segments 1-7 in two Harbors, 2) Analyze prepared slides in stages of meiosis 3) Perform a simulated Karyotype to diagnose a genetic disorder in the culminating project. 4) Prepare this part of the genetics counseling session. |
| **Instructions for Student Accommodations:** Allow students to work with partners. Students may retake Harbor Post Test to demonstrate proficiency. |
| **Assessment for Activity:**  Electronic assessments during knowledge acquisition and Harbor Post tests |
| **Approximate Length of Time for Activity:**  **25 days –** 10 days spent in two Harbors for knowledge acquisition – 5 days culminating project – “Genetics Counseling Simulation” |
| **Materials Needed:**  Harbor materials for knowledge acquisition stage |
| **Resources Needed:**  Applied Vision software for digital microscope, meiosis model activity, Compare and contrast meiosis and mitosis with activity sheet from Tech Issues class and completed in Biology class. |
| Attachments: Student culminating project information sheets |

**Lesson Instructions for \_\_\_\_\_\_\_Tech Issues\_\_\_\_\_\_ (course):**

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| **Standards (Performance Tasks or Course Frameworks or Sunshine State Standards ):**  **Rigor & Relevance (quadrant): D** |
| **Instructions to Teacher:** Prepare **DNA Harbor** for knowledge acquisition – materials, artifacts, and worksheets |
| **Instructions to Students:** 1) Complete segments 1-7 in two Harbors, 2) Prepare genetics disease reports for diabetes, Edwards syndrome, mar fan’s syndrome, polydactyly, sickle-cell, Tay-Sachs, Wilson’s disease. 3) Prepare information of genetic disorder diagnosed by reproduction karyotype into a genetics counseling report. 4) counseling simulation |
| **Instructions for Student Accommodations:** Allow students to work with partners. Students may retake Harbor Post Test to demonstrate proficiency. |
| **Assessment for Activity:**  Electronic assessments during knowledge acquisition and Harbor Post tests |
| **Approximate Length of Time for Activity:**  **25 days –** 10 days spent in two Harbors for knowledge acquisition – 5 days culminating project – “Genetics Counseling Simulation” |
| **Materials Needed:**  Harbor materials for knowledge acquisition stage |
| **Resources Needed:**  **Disease report templates** |
| Attachments: Student culminating project information sheets |

**Lesson Instructions for \_\_\_\_\_\_\_Tech Issues\_\_\_\_\_\_ (course):**

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| **Standards (Performance Tasks or Course Frameworks or Sunshine State Standards ):**  **Rigor & Relevance (quadrant): D** |
| **Instructions to Teacher:** Prepare **Heredity Harbor** for knowledge acquisition – materials, artifacts, and worksheets |
| **Instructions to Students:** 1) Complete segments 1-7 in two Harbors, 2) Prepare pedigrees as instructed in the Harbor 3) Complete the sex-linked traits information guide 4) Complete dominant and recessive gene traits information guide 4) prepare pedigree for the family genetics counseling. |
| **Instructions for Student Accommodations:** Allow students to work with partners. Students may retake Harbor Post Test to demonstrate proficiency. |
| **Assessment for Activity:**  Electronic assessments during knowledge acquisition and Harbor Post tests |
| **Approximate Length of Time for Activity:**  **25 days –** 10 days spent in two Harbors for knowledge acquisition – 5 days culminating project – “Genetics Counseling Simulation” |
| **Materials Needed:**  Harbor materials for knowledge acquisition stage |
| **Resources Needed:**  Applied Vision software for digital microscope, meiosis model activity, Compare and contrast meiosis and mitosis |
| Attachments: Student culminating project information sheets |